Autism and Epilepsy:
Clinical profile across the lifespan

Presentation for the Interagency Autism Coordinating Committee
July 10, 2012

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Professor, Department of Psychiatry, UNC Chapel Hill
Seizure disorders affect 15-30% of children with ASD

<table>
<thead>
<tr>
<th>Prevalent in ASD</th>
<th>Impact</th>
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<tbody>
<tr>
<td>Epilepsy</td>
<td>Poorer outcomes than ASD individuals without epilepsy</td>
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<tr>
<td>Epileptiform abnormalities</td>
<td>Adaptive outcomes</td>
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<tr>
<td></td>
<td>Behavioral outcomes</td>
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<td>Social outcomes</td>
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<td></td>
<td>Increased behavioral challenges</td>
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<td>Increased motor problems</td>
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<td>Increased mortality rate</td>
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- Age of onset is bimodal
- Higher prevalence of epilepsy in children with
  - Syndromic autism
  - Motor impairments
  - Intellectual disability
  - Females (often associated with cognitive impairments)
- Relationship of autistic regression to epilepsy is not definitive
- Children with infantile spasms more likely to develop autism

The clinical profile of autism with epilepsy

Bolton et al., 2011
- 175 individuals followed through 21 years
- 22% developed epilepsy (after 10 yrs for most)
- More common in females than males
- Epilepsy associated with lower nonverbal IQ, lower verbal abilities and social skills

Amiet et al., 2008
- Meta-analysis of 24 studies on autism (N = 2112) and epilepsy (N = 1530)
- Epilepsy present in 21.5% of patients with autism and ID vs. 8% in patients with autism without ID
- Girls with autism more likely to have epilepsy
## Autism Treatment Network

Rates of epilepsy

N = 4,321

<table>
<thead>
<tr>
<th></th>
<th>Autism N=2895</th>
<th>Aspergers N=369</th>
<th>PDD N=1057</th>
<th>ASD N=4321</th>
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<tr>
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<td>7.6%</td>
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<td>85.5%</td>
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## Autism Treatment Network

Rates of epilepsy by IQ

N = 4,321

<table>
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<tr>
<th></th>
<th>&lt;70</th>
<th>&gt;70</th>
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<tr>
<td></td>
<td>N=2370</td>
<td>N=1951</td>
<td>N=4321</td>
</tr>
<tr>
<td>No</td>
<td>46.3%</td>
<td>39.2%</td>
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</tr>
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<td><strong>5.9%</strong></td>
<td><strong>14.5%</strong></td>
</tr>
<tr>
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Epilepsy and sleep disturbance

- Epilepsy is associated with sleep disturbances in children with and without ASD.
- Recent review of 17 studies on sleep and ASD (Hollway and Aman, 2011) found that epilepsy and other medical conditions are associated with disrupted sleep in individuals with ASD.
- Sleep disturbances are associated with:
  - Increased aggressive behavior, irritability, and inattentiveness
  - Sleep disturbance, rather than seizure severity, may contribute to difficulties with irritability and attentiveness (Becker et al., 2004)
Clinical evaluation and treatment

- All seizure types reported, but complex partial seizures are most frequent; signs of CPS are similar to some ASD behaviors (unresponsive to name, repetitive movements).
- EEGs are helpful but difficult to perform. Prolonged/overnight studies are more sensitive than routine ones.
- High rates of epileptiform EEGs have been reported in children with ASD without clinical epilepsy; clinical significance is unclear.
- Evaluation of genetic etiology is important because seizures are more common in syndromic forms of ASD.
- Anticonvulsant treatment choice is related to type of seizure, EEG findings, and tolerability of medication.

Common neurological co-morbidities in autism spectrum disorders
Kiran P. Maski\textsuperscript{a}, Shafali S. Jeste\textsuperscript{b} and Sarah J. Spence\textsuperscript{a}

Current Opinion in Pediatrics 2011, 23:609–615
# Current Standards for Treatment and Management

## Current Standards

- AAP Identification and Management of ASD
- ASD Practice Parameter (American Academy of Neurology and Child Neuro)
- AAP Autism Tool Kit

## Limitations

- Need more information on evaluation of epilepsy
- Autism Tool Kit is resource but not guideline

## ATN/AIR-P Activities

- Clinical Practice Guidelines for EEG
- Clinical Practice Guidelines for Neuroimaging testing
- To be published in 2013
Autism-Epilepsy Subtype

- Identifying this shared biology can have consequences for identifying
  - common genetic and other types of risk factors
  - common biological targets for treatment

Tuchman et al. 2009, Tuchman et al. 2010; Tuchman & Cuccaro 2011